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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/630,590	07/29/2003	Peter S. Lu	34170-701.501	4993

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EXAMINER

LUCAS, ZACHARIAH

ART UNIT	PAPER NUMBER
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1648

DATE MAILED: 10/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/630,590

Applicant(s)

LU ET AL.

Examiner

Zachariah Lucas

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 3-8, 10-15 and 24-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1, 3-8, 10-15, and 24-26 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Currently, claims 1, 3-8, and 10-22, and 24-26 are pending.
2. In the prior action, the Final action mailed on August 10, 2005, claims 1, 3-8, and 10-20 pending; with claims 1, 3-8, and 10-15 under consideration and rejected; and claims 16-20 withdrawn as to nonelected inventions.
3. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on August 8, 2006 has been entered. In addition, a Supplementary amendment was submitted on August 18, 2006.

In these amendments, the Applicant amended claims 1, 5, 6, 10, and 15; added and amended claims 21, 22, 24, and 25, added and cancelled claim 23; and added claim 26.

Claims 1, 3-8, 10-15, 21, 22, and 24-26 are under consideration.

Claim Objections

4. **(New Objection)** Claims 21 and 22 are objected to because of the following informalities: these claim further describe the "method of claim 1, 6, 10." It appears that the Applicant intended to refer to these claims in the alternative. It is suggested that the claim be amended to read on - - method of any one of claims 1, 6, or 10- - to clarify that the claim is a proper multiple dependent claim referring to the prior claims in the alternative.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. **(New Rejection)** Claims 6-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. These claims are drawn to systems for the detection of the presence of an oncogenic human papillomavirus (HPV). The claims indicate that the claims are drawn to methods. See e.g., line 2 of claim 6, stating "said method comprising." However, the claim provides only structural identification of the claimed system.

Since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a method without any active, positive steps delimiting how this use is actually practiced.

Because the claims indicate that they are drawn to methods, and as they have been so treated during prosecution of the application, the claims will continue to be so treated.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. **(Prior Rejection- Restated and Maintained)** Claims 1, 3-8, 10-13, and 15 were rejected under 35 U.S.C. 103(a) as being unpatentable over the teachings of Davis (U.S. 5,610,077) in view of Glaunsinger et al. (Oncogene 19: 5270-80) and Bleul (U.S. 5,753,233). The claims have now been amended to exclude embodiments wherein the PDZ domain polypeptide could be the full length MAGI-1 protein (i.e. the claims require a PDZ polypeptide of less than 1000 amino acids that comprises MAGI-1 PDZ domain 2). In addition to traversing the rejection as previously applied, the Applicant's also note that the teachings of Thomas et al. (Oncogene, 20: 5431-39) were referred to in the prior action. The Applicant asserts that they have priority to Provisional application 60/309841 such that the Thomas reference cannot be applied as art against the present application. These arguments are not found persuasive.

With respect to the first arguments in traversal, the Examiner agrees that the previously cited references do not teach or suggest the use of the PDZ domain 2 of the MAGI-1 protein as a ligand for HPV oncogenic E6 proteins. However, as was stated in the prior action, this amendment is nullified by including the teachings of Thomas in the rejection. The rejection is therefore restated as a rejection of claims 1, 3-8, 10-13, 15, 21, 22, and 24-26 over the teachings of Davis in view of Thomas and Bleul. Thomas provides similar teachings to those of Glaunsinger, except that the Thomas reference indicates that both the E6 proteins of both oncogenic HPV strains 16 and 18 specifically bind to the PDZ domain 2 of the MAGI-1 protein; whereas Glaunsinger identified only the MAGI-1 protein in general. Further, because Thomas shows that the E6 proteins bind to a PDZ polypeptide comprising only residues 454-582 of the

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MAGI-1 sequence (corresponding to the sequence of PDZ domain 2 in the present application), the reference teaches the use of a peptide of less than 1000, 500, and 200 amino acids.

It is also noted that new claims 24-26 read on methods wherein the PDZ polypeptide is a fusion protein comprising the PDZ polypeptide fused to a heterologous domain. In teaching methods for the detection of an analyte, the Davis reference teaches that at least one of the binding partners for the analyte is conjugated to a detectable marker. Col. 2, lines 26-46. Further, the Thomas reference teaches the fusion of the MAGI-1 PDZ domain to the marker GST for use in a binding assay. From these teachings, it would have been obvious to those of ordinary skill in the art to use such PDZ polypeptide fusions in the assays for detection of the HPV E6 proteins suggested by the cited references. Because the additional limitations of claims 24-26 are obvious over the teachings of the cited art, these claims are included in the restated rejection.

The Applicant's arguments regarding the deficiencies of the previously cited references are therefore not found persuasive for two reasons. First, with the exception of the failure of the Glaunsinger reference to teach the use of polypeptides of less than 1000 amino acids, the deficiencies of each of the references is supplied by one of the other cited references or by the knowledge of those of ordinary skill in art based on the teachings of such other references, as was described in the prior actions. Second, the deficiency of Glaunsinger with respect to the size of the PDZ polypeptide is corrected by reliance on Thomas instead of Glaunsinger as described above and in the conclusion of the prior action.

With respect to the Applicant's arguments regarding their claim to priority to provisional application 60/309,841, it is agreed that the Applicant has established priority with respect to the

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use of the PDZ domain 2 as a ligand to the HPV **16** E6 protein. However, the provisional application does not provide the Applicant with priority over Thomas with respect to the detection of every oncogenic strain of HPV. In particular, while the provisional application indicates that the E6 protein of each of the oncogenic HPV strains 16, 18, and 31 “are PDZ ligands” based on the presence of a PL motif in each of these E6 proteins, it does not teach that each of these E6 proteins is capable of binding specifically to the PDZ domain 2 of MAGI-1. Pages 87-88. I.e., the provisional application identifies these E6 proteins a ligands to PDZ polypeptides in general, but does not conclude or even suggest that they are each a ligand for the MAGI-1 protein, or for PDZ domain 2 of that protein. In view of this, and as the teachings of Thomas do specifically teach the binding of the E6 protein of HPV **18** to MAGI-1 PDZ domain 2, the Thomas reference qualifies as prior art against the claims as least to the extent that they read on the detection of the E6 protein of HPV 18.

For these reasons, and for the reasons of record, the Applicant’s arguments are not found persuasive. The rejection as restated is therefore maintained over the arguments regarding priority to the provisional application.

9. **(Prior Rejection- Restated and Maintained)** Claim 14 was rejected under 35 U.S.C. 103(a) as being unpatentable over Davis in view of Bleul and Glaunsinger as applied above, and further in view of Kehmeier et al. (Virology 299: 72-87). Claim 14 has been amended in a similar manner to claims 1 3-8, 10-13, and 15 as described above. The Applicant traverses this rejection on the same basis as described above. The rejection is therefore restated as a rejection of claim 14 over the teachings of Davis in view of Bleul and Thomas as applied above,

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and further in view of Kehmeier, and is maintained as restated for the reasons indicated above and of record.

10. **(New Rejection)** Claims 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over the teachings of Davis (U.S. 5,610,077) in view of Glaunsinger et al. (Oncogene 19: 5270-80) and Bleul (U.S. 5,753,233). These claims have been described in part above. Claim 24 indicates that the fusion protein of that claims comprises a heterologous domain and a PDZ polypeptide that is less than 1000 amino acids. However, because the claim “comprises” these domains, it does not exclude additional sequences, including additional sequences of the MAGI-1 protein. This is because such fusions would include both the heterologous domain and the PHZ polypeptide sequence of less than 1000 residues in addition to the other sequences present in the fusion. The claims therefore read on embodiments wherein the fusion protein comprises a full-length MAGI-1 protein fused to a heterologous domain.

As was indicated above, the Davis reference teaches the use of a binding partner for the target analyte wherein the binding partner has been detectably labeled. The Glaunsinger reference also provides teaches similar to those of Thomas, showing the use of a fusion of the MAGI-1 protein with a FLAG tag, and the use of a GST fusion for use in binding assays. See e.g., page 5275, Figures 8 and 9. Those of ordinary skill in the art would have had a reasonable expectation of success in the combination for the reasons of record, and because the Glaunsinger reference demonstrates the operability of the indicated heterologous domains as markers in binding assays. The combination of these references therefore render obvious the use of fusions comprising the PDZ polypeptide and a heterologous domain in the indicated methods.

Double Patenting

11. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

12. **(Prior Rejection- Restated and Maintained)** Claims 1-15 were provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 3, 4, 8, 9, 10 of copending Application No. 10/847,818. This rejection is withdrawn from cancelled claims 2 and 9. This rejection is restated as a rejection of claims 1, 3-8, 10-15, and 24-26 over claims 1, 3, 4, 8, 9, and 10 of copending Application No. 10/847,818 further in view of the teachings of Thomas.

The Applicant traverses the rejection on the basis that the present claims have been amended to require that the PDZ domain polypeptide has less than 1000 amino acids in length and comprises the amino acid sequence of the MAGI-1 PDZ domain 2 (a limitation not in the copending claims); and that the present claims represent a non-obvious embodiment of the copending claims. Because the claims of the copending application are not directed to the detection of any particular viral protein, or the use of any particular PDZ domain, their

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arguments that the present claims represent a distinct species of the copending claimed genus is found persuasive with respect to the previously presented rejection.

However, these arguments are not found persuasive with respect to the restated rejection in view of the additional teachings of Thomas et al. (*supra*), which discloses the binding of the HPV 18 E6 protein to MAGI-1 PDZ domain 2. These teachings demonstrate that it would have been obvious to those of ordinary skill in the art to use the MAGI-1 PDZ domain 2 to detect the presence of the HPV 18 E6 protein as described by the copending claims. Those in the art would have had a reasonable expectation of success in the combination of these teachings as Thomas merely provides teachings identifying a particular PHZ polypeptide/ PL protein interaction that may be targeted by those in the art using the method of the copending claims. The Applicant's arguments in traversal are therefore not found persuasive with respect to the restated rejection, and the rejection is maintained.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

13. **(New Rejection)** Claims 24-26 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 3, 4, 8, 9, 10 of copending Application No. 10/847,818 in view of Glaunsinger et al. (*supra*). These claims have been described above.

These claims vary from claim 1 in that they permit the use of a fusion protein comprising the full-length MAGI-1 protein, whereas claim 1 is limited to PDZ polypeptides of less than 1000 amino acids. See e.g., discussion in paragraph 8 above. The teachings of Glaunsinger have

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been described above. The teachings of this reference therefore provide teachings similar to those of the Thomas reference as applied in the obviousness-type double patenting rejection above. The combined teachings of the copending claims and Glaunsinger therefore render claims 24-26 obvious for substantially the same reasons as indicated with respect to the copending claims and Thomas above.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

14. **(New Rejection)** Claims 1, 3-8, 10-15, and 24-26 provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-15 of copending Application No. 11/053076. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of the copending application do not place the size limitations of the present claims on the PDZ polypeptide. However, the copending claims do described embodiments wherein the PDZ polypeptide comprises the MAGI-1 PDZ domain 2, which is a polypeptide comprising only 101 amino acids. Thus, the copending claims suggest embodiments wherein the PDZ polypeptide meets the present limitations. The present claims therefore represent an obvious variation of the copending claims.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Conclusion

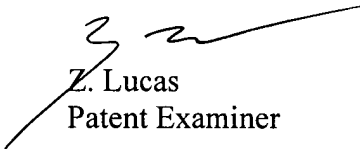
15. No claims are allowed.

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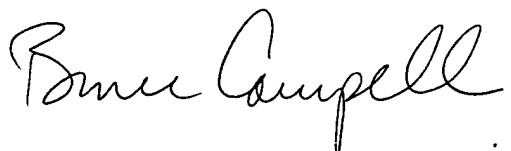
16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zachariah Lucas whose telephone number is 571-272-0905. The examiner can normally be reached on Monday-Friday, 8 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bruce Campell can be reached on 571-272-0974. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Z. Lucas
Patent Examiner



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